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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/764,042	01/16/2001	David H. Davies	M-998US	5686

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EXAMINER

ANGEBRANDT, MARTIN J

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 11/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/764,042

Applicant(s)

DAVIES ET AL.

Examiner

Martin J Angebranndt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09/01/2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 and 30-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 and 30-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. The response provided by the applicant has been read and given careful consideration.

Responses to the arguments offered by the applicant are presented after the first rejection to which they are directed. Rejections of the previous office action, not appearing below are withdrawn on the basis of the arguments and amendment of the applicant.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1,4,5,7-10,18,30,33 and 58 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Daimon '309.

Daimon '309 describes a molded polycarbonate substrate, a reflective layer, a SiN dielectric layer, a TbFeCo magneto-optic recording layer, a 80 nm SiN layer and a 10 nm Carbon layer. The medium is read by reflection through the carbon layer.

The applicant argues that the limitation of the coupling layer being adapted to couple the metal/allow layer into air is not met by the carbon lubrication layer of Daimon '309. This is

incorrect and the light is coupled into air in evanescent/near field recording, but the spacing is very small. The carbon layer is transparent and couples the light in the recording medium, it is the lens which defines the type of recording as being near field or far field recording. If the applicant wishes to exclude multiple layers, then the claims should exclude other layers. The applicant argues that to couple light into the layer, the thickness must be a fraction of a wavelength in thickness and act as an antireflection layer. The claims are not limited to antireflection thicknesses, the layers must allow light to pass to meet the coupling language. If the applicant intends the claims to be limited to an antireflection condition, then the claims should actively recite this. The examiner also points out that for antireflection conditions to be met the optical thickness of the protective layer may be any sum of one $\frac{1}{4}$ wavelength plus any multiple of the wavelength to optimize the phase for that specific wavelength. The examiner also holds that for some wavelength with which the recording layer of Daimon '300 is useful, the carbon layer optical thickness (the product of the physical thickness and the refractive index) is antireflecting. The examiner notes that the wavelength is not specified in the claims. The rejection stands.

5. Claims 1-10, 18-20, 24-26 and 30 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Yasuda et al. '788.

Figure 3 shows a substrate, with a second recording layer (13), an intermediate layer of 30 microns (14), a first recording layer (15) with a protective layer of 100 microns coated thereon. (15/27-64). The figure clearly shows the addressing laser incident from the side of layer 16. Figure 25 shows a polycarbonate support (22), a 20 nm reflective film (23a), a second enhancement film (23b), a second crystallization promotion layer (23c), a phase change

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recording material (23d) , a first crystallization promotion layer (23e), a second enhancement film (23f) and a semitransparent enhancement film, which is later coated with 30 microns of an acrylic resin (**considered the first transparent layer**). (see example 5) This is overcoated with a second recording layer assembly and finally coated with a 70 micron acrylic layer (26). The reading is from the side opposite the substrate. Useful substrates may be 0.3 to 1.2 mm thick and the protective layer may be 10-177 microns thick. (4/15-60)

The examiner holds that the article claims are anticipated by at least the intermediate product disclosed in example 5, prior to the coating of the final (70 microns) acrylic layer. The examiner is of the opinion that the 70 micron layer would move dust outside the focus of the laser reading/writing on the upper recording layer. Clearly, the optical recording medium is adapted to read/write from the side opposite the substrate as evidenced by figure 25.

The examiner also holds that for some wavelength with which the recording layer of Yasuda et al. '788 is useful, the protective layer (the acrylic layer) optical thickness (the product of the physical thickness and the refractive index) is antireflecting. The examiner notes that the wavelength is not specified in the claims. The rejection stands.

6. Claims 1-10, 18-26 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuda et al. '788.

It would have been obvious to one skill in the art to modify example 5 by using a thinner protective layer of 10 microns, in place of the thicker 70 microns with a reasonable expectation of the layer functioning to protect the surface of the medium. Further, the examiner holds that it would have been obvious to use other substrate thicknesses disclosed 0.3 mm with a reasonable expectation of forming a useful optical recording medium.

The applicant discloses that thicknesses of greater than 15 microns will facilitate defocusing (prepub at [0041]), therefore the scope of coverage sought would seem to exclude protective layers thicker than 15 microns.

The rejection stands for the reasons provided above.

7. Claims 1-10,12-26,30 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda et al. '609, in view of Holster et al. '553 and Yasuda et al. '788.

Takeda et al. '609 teaches with respect to figures 13, a central substrate with information embossed on both sides, the formation of reflective films (46), a light curing resin which is cured in contact with the reflective layers and other mold surfaces, the deposition of semitransparent films (45) and the coating of these films with a protective layer. The semireflective layer is silicon nitride. The use of this with other recording layer types is disclosed. (7/9-15) The thickness of the internal substrate is 0.3 mm or 0.8 mm. (4/4-9 and 5/60-61). The protective and intermediate layers are 0.1 mm thick and UV curable. (5/24-34 and 4/40-50). The use of depth of focus adjustment is disclosed with respect to figure 13 and 18. The use of evaporative deposition and sputtering is disclosed. (5/11-17)

Holster et al. '553 teaches the use of dielectric films or thin 10-20 nm thicknesses of Au, Ag, Ni, Al or the like for semitransmissive films (4) (7/56-68) teaches a protective layer between the reflective layer and the spacer. The spacer layer is illustrated to be much thicker than the protective lacquer (56 in figure 5)

It would have been obvious to one skilled in the art to modify the invention of Takeda et al. '609 by replacing the semitransparent silicon nitride dielectric film with a metal or alloy film

based upon the teachings of equivalence by Holster et al. '553 and to use thinner protective films based upon the teachings of Holster et al. '553 and Yasuda et al. '788.

The applicant points out that the thick substrate materials cause optical aberrations and wavefront distortions in the optical medium. The examiner recognizes this argument, but notes that the 0.6 mm substrates of the prior art described in the instant application are much thicker than the 0.1 mm protective layers of Takeda et al. '609, which also uses the central substrate of the claimed optical recording medium. Thicknesses such as these are not described in the specification as having a deleterious effect on the performance of the medium. Further, the examiner notes that specification does not speak to the thinner protective lacquer taught by Holster et al. '553 (3/15-16 and 11/39-40). The protective lacquer of Holster et al. '553 transmits the light and is therefore held to meet the "coupling" limitation of the claims. The rejection stands.

The applicant has asserted in the arguments and in the specification (prepub at [0015]), the benefits of using a substrate embossed on both side and built out from the center to produce an optical recording media on both sides. The examiner notes that Takada et al. '609 predates this discovery by the applicant. When the central substrate embodiments are used, the need for additional support is reduced and other layers may be thinner and clearly there would be no need for other embossed substrates. This is taught in the art. The applicant can argues the point, but should not ignore the teachings of figures 5-18 of the Takeda et al. '609 reference which shows the same embossing and coating processes as figures 5a-6e of the instant application. The issue of thinner protective layers is clearly taught by Yasuda et al. '788.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The thin protective layer is taught in Yasuda et al. '788. The examiner notes that if the applicant wishes the claims to be limited to subwavelength thicknesses, then the claims should actively recite this. Merely allowing the light to reach the recording layers is within the breadth of coupling. The rejection stands.

8. Claims 1-10,12-26,30 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda et al. '609, in view of Holster et al. '553 and Yasuda et al. '788, further in view of Wilting et al. '497.

Wilting et al. '497 teach changing the relative placement of the reflective and the partially reflective layers to allow the recording medium to be read either through the top (protective layer) or through the bottom (substrate). The use of protective coatings of 3-10 microns formed from organic materials or 100-500 nm coatings formed from inorganic materials is disclosed. (7/55-57). The reading from either side is shown in the figures.

In addition to the basis provided above, the examiner cites Wilting et al. '497 to support the position that thin protective layers are known in the optical recording media art and that one of ordinary skill in the art based upon the direction within the figures of Holster et al. '553 would have modified the combination of Takeda et al. '609 and Holster et al. '553 to use protective layers made from UV curable materials as taught by Takeda et al. '609 and Holster et al. '553 in thinner coatings, such as those taught by if Wilting et al. '497 only to save money on UV curable

material. Wilting et al. '497 demonstrates that the thick coating are not necessary for the layers to act as protective layers.

The rejection stands for the reasons provided above without further comment as no further arguments were presented.

9. Claims 1-10,12-26,30 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda et al. '609, in view of Holster et al. '553, Yasuda et al. '788, Wilting et al. '497 and Nishiuchi et al. '619.

Nishiuchi et al. '619 teach that the UV curable intermediate layer may be 40 microns thick (13/29-31). The use of phase change recording materials in place of one of the reflective layer is disclosed, including direction to InSb materials. (14/36-61) The read only materials may be dielectrics such as silicon nitride and metals such as gold, aluminum or copper. (13/65-14/6). Examples 4 and 5 (figures 18 and 19) teach the phase change layer as the further of the recording layers and utilize them. Examples 2+ use 680 nm lasers light.

It would have been obvious to one skilled in the art to modify the invention of Takeda et al. '609 as combined with Holster et al. '553, Yasuda et al. '788, Wilting et al. '497 by replacing the semitransparent silicon nitride dielectric film with a metal or alloy film based upon the teachings of equivalence by Nishiuchi et al. '619. Further it would have been obvious to one skilled in the art to include a phase change recording layer adjacent to the fully reflective layer to allow the medium to record as well as replay information.

The rejection stands for the reasons provided above without further comment as no further arguments were presented.

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10. Claims 1-26,30 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda et al. '609, in view of Holster et al. '553, Yasuda et al. '788, Wilting et al. '497 , Nishiuchi et al. '619 and Pan et al. '680.

Pan et al. '680 teaches that SbInSn have stable state, resistance to corrosion , fast crystallization rates and are able to be recorded at high densities. (3/16-57).

In addition to the basis provided above, the examiner holds that it would have been obvious to modify the invention of Takeda et al. '609 combined with Holster et al. '553, Yasuda et al. '788, Wilting et al. '497 and Nishiuchi et al. '619 to take advantage of the properties of the InSbSn compositions of Pan et al. '680 with a reasonable expectation of realizing these.

The rejection stands for the reasons provided above without further comment as no further arguments were presented.

11. Claims 1-10,12-26,30,32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda et al. '609, in view of Holster et al. '553, Yasuda et al. '788 and Wilting et al. '497, further in view of **either of** Nakahara et al. '278, Sugita et al. '494 or Allebest et al. '515.

Nakahara et al. '278 teach optical recording media 40 mm in diameter (8/14-16).

Sugita et al. '494 teach optical recording media 1.9 inches (48.2 mm) in diameter (11/11-14).

Allebest et al. '515 teach optical recording media with 30 mm in diameter substrates (3/65)

It would have been obvious to one skilled in the art to modify the invention of Takeda et al. '609 combined with Holster et al. '553, Yasuda et al. '788 and Wilting et al. '497 by using

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different disk substrates known in the art, such as those disclosed by **either of** Nakahara et al. '278, Sugita et al. '494 or Allebest et al. '515 to allow these to be played on these types of players, which are assumably smaller.

The rejection stands for the reasons provided above without further comment as no further arguments were presented.

12. Claims 1-26,30-32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda et al. '609, in view of Holster et al. '553, Yasuda et al. '788, Wilting et al. '497, Nishiuchi et al. '619 and Pan et al. '680, further in view of **either of** Nakahara et al. '278, Sugita et al. '494 or Allebest et al. '515.

It would have been obvious to one skilled in the art to modify the invention of Takeda et al. '609 combined with Holster et al. '553, Yasuda et al. '788, Wilting et al. '497, Nishiuchi et al. '619 and Pan et al. '680 by using different disk substrates known in the art, such as those disclosed by **either of** Nakahara et al. '278, Sugita et al. '494 or Allebest et al. '515 to allow these to be played on these type of players, which are assumably smaller.

The rejection stands for the reasons provided above without further comment as no further arguments were presented.

13. Claims 1-26 and 30-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda et al. '609, in view of Holster et al. '553, Yasuda et al. '788, Wilting et al. '497, Nishiuchi et al. '619 and Pan et al. '680, further in view of **either of** Nakahara et al. '278, Sugita et al. '494 or Allebest et al. '515 combined with Gotoh et al. '736 and Mumford et al. WO 99/45539.

Gotoh et al. '736 teach the provision of a coding area in a PCA sector to allow use of the ROM areas of the CD (31/54-32/27).

Mumford et al. WO 99/45539 teaches the provision of a coding area in a write once band or sector to allow use of the ROM areas of the CD (page 3/second paragraph).

It would have been obvious to one skilled in the art to modify the invention of Takeda et al. '609 combined with Nishiuchi et al. '619, Yasuda et al. '788, Pan et al. '680 and **either of** Nakahara et al. '278, Sugita et al. '494 or Allebest et al. '515 by encoding information on the discs in the writable areas to prevent pirating as disclosed by Gotoh et al. '736 and Mumford et al. WO 99/45539.

The rejection stands for the reasons provided above without further comment as no further arguments were presented.

14. Claims 1-10,12-26,30 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda et al. '609, in view of Holster et al. '553, Yasuda et al. '788 and Wilting et al. '497, combined with Ueno et al. '457

It would have been obvious to modify the process of using the optical recording media of Takeda et al. '609 combined with **either of** Fujimori et al. '547, Yasuda et al. '788 Holster et al. '553, Kobayashi et al. '868 or Saito et al. '454 by using differences in reflectivity rather than depth of focus based upon the disclosure of equivalence by Ueno et al. '457.

The rejection stands for the reasons provided above without further comment as no further arguments were presented.

15. Claims 1-26,30 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda et al. '609, in view of Holster et al. '553, Yasuda et al. '788 ,Wilting et al. '497, Nishiuchi et al. '619 and Pan et al. '680, further in view of Ueno et al. '457

It would have been obvious to modify the process of using the optical recording media of Takeda et al. '609 combined with Yasuda et al. '788, Nishiuchi et al. '619 and Pan et al. '680 by using differences in reflectivity rather than depth of focus based upon the disclosure of equivalence by Ueno et al. '457.

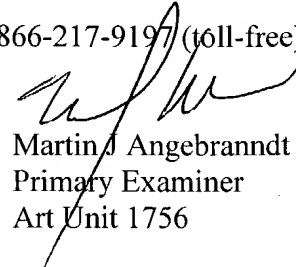
16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebrannt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Martin J. Angebranndt
Primary Examiner
Art Unit 1756

3/12/2004